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1944

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ACTIVITY OF THE INTERNATIONAL INSTITUTE OF AGRICULTURE

The Institute activity in 1943. — While foreign relations of the International Institute of Agriculture in 1943 continued to be rather limited on account of the vicissitudes of international life, it is nevertheless a matter of satisfaction to see that the reputation which our institution enjoys in official circles and among cultured people, far from declining, was further enhanced. We feel that we can state that its character of a public right body assigned to it by its foundation charter, its extra-territoriality, its diplomatic prerogatives arising from the convention that set it up as well as from international tradition and from the Italian law of 1930, received a new consecration. In fact, several measures taken by the authorities in favour of the Institute concerning the application of these prerogatives in the present circumstances, have put it safely outside of all interferences of a national order and of the violent repercussions of the present conflict. Thus, the year 1943 registered an even more significant confirmation of the international character of the Institute than in the past, and a further consecration of its repute as an organisation of all the Member States, without any difference, within the frame of the interests of agricultural economy and of the agricultural class.

As regards the work accomplished by the Institute, it is evident that as long as the war lasts and goes on towards its acute stage, the initiative and activity of its technical services could not fail to be further hindered. It is for this reason that the Administration thought, and the Permanent Commettee confirmed and approved that during the last twelve months this activity could usefully be directed towards two objectives : first that of bringing the documentation on all the matters within its domain without any exception entirely up to date, but naturally insisting more particularly on such questions as the urgency and vastness of the tasks of reconstruction will appear of the utmost importance in a near future ; second, that such studies be published which, from this very moment, may constitute a solid substratum for future wider researches.

All that the Institute published and initiated in 1943, indisputably reveals this double necessity of its technical work. It is now superfluous to mention one or the other of the subjects that were treated. The special characteristics of each one of these subjects are put in their proper light a little further on, in such way as to show the directive lines of the systematic and properly coordinated studies undertaken by the Institute in this period of intense preparation of a program of wider activity.

If our work is unavoidably stationary in the domain of international realisations and international relations, the Member States may nevertheless rest assured that their interest in the welfare of our institution is reciprocated by the technical work

of recapitulation, documentation and analysis that our services accomplish with great zeal, in order to make the Institute a live and active instrument of future reconstruction.

General Secretariat. — Besides the ordinary tasks of administration and general coordination of all the Services of the Institute and of the different branches of the Secretariat itself (Economat-Pay Office, Archives, Personnel, Press, Management of publications) the General Secretariat has been busily engaged in the solution of a number of practical questions arising from the application of the regime of diplomatic immunities in time of war. Preoccupations and difficulties often created by war circumstances, were overcome, thanks to the comprehension and good will constantly shown us by the different authorities.

The General Secretariat published in 1943 the English text of the pamphlet that had appeared in French in 1942 under the title : *Some Aspects of the Work of the I. I. A.* (1905-1941).

In addition to his administrative tasks and coordination of all the services, the Secretary General in special reports, turned his most careful attention on some of the problems which, right after the war, will require the study of Governments and specialists in order to put them on a rational and practical basis at the same time; and also to show the eminent part that will be played in their solution by agriculture and consequently by the International Institute of Agriculture, especially when the time will come to put into practical operation the results of this study and the solutions suggested for these problems. Three subjects were taken up for a thorough study by the Secretary General in 1943.

The Section of Agricultural Legislation of the General Secretariat contributed most efficiently to the effort of the Institute to uphold the high reputation of its work. The XXXII volume of its *Annuaire international de Législation agricole* (1942) appeared in 1943. This Yearbook is published only in French. It contains an introduction on Agricultural Legislation in War Time (*La législation agricole de la période de guerre*). The publication of the collection of texts of laws, reproducing the most important measures taken by the different States in the matter of agriculture and agricultural policy, was continued meanwhile. Moreover, the direction of the *International Bulletin of Agricultural Law*, (an initiative taken by the Institute during the war) published the English text of No. 6 and the French and German text of No. 7 of the series. This issue deserves to be particularly marked out for a study on *The International Institute of Agriculture : its organisation and its juridical constitution.*

General Statistics. — The practically complete cessation of telegraphic and postal communications with foreign countries, deprived our Bureau of Statistics of all the sources of information regarding the data on production, foreign trade, stocks and prices of agricultural commodities. It was necessary, therefore, to stop the publication in our Bulletins of the sections containing these data. The Bureau, however, was able to maintain and even develop both the part of the Bulletin consecrated to surveys on certain products or groups of products and that dealing with the recent evolution of agricultural production in some countries (*Oleaginous cultures in America ; Horticulture and fructiculture in Germany ; Agricultural changes in Denmark, Netherlands, Sweden and Switzerland during the war ; Cane sugar production in* 1942-43] *Livestock in Finland*, etc.).

Moreover, the Bureau of Statistics continued its work for the preparation of the volume " *Les grands produits agricoles : Compendium international de Statistiques*, now in the press. This work for which enormous difficulties had to be overcome,

aims at giving a rapid orientation in the researches on both the distribution of production and consumption of the most important agricultural commodities among the different countries and between continents, and on international and intercontinental exchanges.

The monograph on the *International Trade in Wood* 1925-1939 required also the utmost attention on the part of the Bureau. Two other parts (after that dedicated to Europe) dealing with Africa, Oceania and America, were published during the year, while the part dedicated to Asia is about ready and will complete the work.

A certain number of questions dealt with in the Bulletin, originated a *New series of studies on international agricultural problems during hostilities*, two of which were published by the Bureau of Statistics in 1943 under the titles *Oleaginous crops in Europe.* and *Cereals growing in Europe.*

Moreover, the Bureau of Statistics continued the *Series of studies of principal agricultural products on the world market.* A monograph in French on Sericulture in the world. (*La sériculture dans le monde*, No. 8 of the Series) is now in the press while a *Supplement* to volume III (Africa) of the *International Yearbook of Forestry Statistics*, has already appeared and the English text of the volume (published in French in 1942) on *Agricultural commodities and raw materials* (*Production and consumption in the different parts of the world*), is in printing.

Agricultural Science. — In 1943, the Bureau of Agricultural Science completed the French text of No. 7 of the *Series of studies of the principal agricultural products on the world market "Production et commerce du caoutchouc dans le monde"*. This number is now in the press. The English edition appeared in 1940 under the title ***World Rubber Production and Trade.*** In the press are also other subjects which are quite important in view of world reconstruction, especially as regards *human alimentation and hygiene, agricultural industries, agricultural engeneering, horticulture.* The result of these studies were some well prepared and highly documented articles that appeared in the bulletin of the Bureau during the year. We mention, among them : *Some aspects of the problem of alimentation in view of the work of post-war reconstruction ; Observations on the necessity of health improvement among the rural population ; The evolution, through the war, of building methods and its effect on agriculture ; Jute* (première étude d'une série sur les fibres textiles, surtout tropicales) ; *Standardization of fruits and vegetables.* The Bureau turned its most careful attention also on a subject of the highest importance for the advance of agriculture in some regions, namely the problem of the *conservation and deterioration of the soil.* Some among the subjects treated in the pages of the Bulletin, concern the U. S. S. R. and the Union of South Africa.

Notwithstanding the many difficulties preventing a steady flow of information, the Bureau continued the publication of the *International Bulletin of Plant Protection* pointing out phytopatologic novelties and actualities.

Economic and Social Studies. — The Bureau of Economic and Social Studies has been busily engaged with the most pressing problems of agricultural economy and sociology, with particular regard to the future action that will be taken by the different States in view of post-war reconstruction. The concrete result of this activity were the following studies : *The economic importance of the various size groups of farms in European agriculture ; The small holding ; its creation and problems ; The social structure of the population gainfully occupied in agriculture ;* The influence of the *intensification of farming on the returns of Agriculture ; The rôle of the savings banks in the financing of agriculture; The cost of insurance in the budget of agriculture.* The Bureau turned its attention also to some important problems

of national economy, such as *Production and consumption of edible oils and fats in Switzerland*; *Depopulation of the highland areas in Italy*; *Compulsory State hail insurance in Bulgaria*. We will lastly mention a report prepared by the Bureau on "*Questions relative to reconstruction after the war*" which give a full account of the work done at presently in the belligerant countries in view of the re-establishment and valorisation of Agriculture after the war. The documentary material at the disposal of the Institute was subject, in this report, to a very rigorous critical examination in order to bring out and discuss the main aspects of a contingent or permanent character of agricultural reconstruction.

Library. — In 1943, the Library Bureau issued the four pamphlets of the 5th volume of *International Bibliography of Agricultural Economics* while it prepared a study on the *Development of rural economy research in the United States*. This study will soon be published. Moreover the Bureau lent its assistence in all bibliographic researches needed by the other Bureaus for their work, and to numerous consultations of our material from outside.

Program of work for 1944. — The effcts of war activities on the possibilities of current documentation of the International Institute of Agriculture are too changeable to allow fixing a program of work *ne varietur*. Under the circumstances, the Administration is of the opinion that it is better to stick to general directions which, while admitting the possibility of future modifications, set, from this very moment, the essential obiectives of the activities of the Institute Bureaus.

The program of the Bureau of the General Secretariat includes a careful revision of the methods of abstract, registration and distribution of the press services and propaganda, in order that the current activities of the International Institute of Agriculture be better known to agricultural centers and international organisations.

Moreover, besides attending to his tasks as the administrative director of the Institute, the General Secretary intends to continue his studies and the scientific examination of the problems of world agricultural and economic reconstruction. A scheme of work, approved by the Permanent Committee in 1940, was submitted to the consideration and approval of the different Governments at the proper time. The Institute has received from several of them a number of adhesions and suggestions. The time has now come to undertake, within the frame of this general program, the elaboration of the parts dealing with particular questions. This is just what the Secretary General did in 1943 and will continue to do in 1944, in order to put the Institute in the condition to present to future consultations and meetings a scientific material worthy of its past and competence.

The Section of Agricultural Legislation is already preparing the *International Yearbook of Agricultural Legislation* 1943, which will probably appear (in French) at the end of July 1944. The series of *Texts of Laws* as well as the preparation of No. 8 of the *International Bulletin of Agricultural Law* will be regularly continued.

The Bureau of General Statistics is proposing to publish in its Bulletin other studies of a general retrospective character and some methodologic surveys of agricultural statistics as soon as mail communications will permit it. It also proposes to resume the now suspended sections dealing with current information on agricultural production foreign trade, stocks and the prices of agricultural commodities.

INTERNATIONAL BULLETIN
OF PLANT PROTECTION

1944 Nos. 1 & 2

DISCOVERIES AND CURRENT EVENTS *

ITALY.

The fungicidal efficacy of urine and the doses to be employed in treatments †

In previous investigations we treated on the biological efficacy of animal urine upon the seeds of higher plants: specific dilutions of fresh urine proved capable of devitalizing embryos of plants of agricultural importance, while major dilutions, which usually induce a temporary check in the development of the seedling grown from the treated seed, act as stimulant to the growth of the adult plant. This stimulating action and its effects may continue on the plant throughout the period of fructification.

These results suggested a method of treating the seed by which the plant derived from the treated seed assumed and maintained an appreciable accelerated rate of growth, with corresponding crop yield §.

It has not yet been established which component of urine more than any other or exclusively, acts to produce the biological effects in question; having noted, however, that the efficacy of the urine of young or sexually immature animals

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* Under this and the next heading the countries are arranged in French alphabetical order.

† Communication from Messrs V. RIVERA, C. SEMPIO and A. SHKJEZI, Plant Pathology Institute of the University and Phytopathological Observatory, Perugia, Italy.

§ On this subject see: —

RIVERA, Vincenzo. Concia delle sementi con urina di vacca gravida. *La Ricerca Scientifica ed il Progresso tecnico nell'Economia nazionale*, Roma, 1938, ser. II, anno IX, vol. I, nn. 9-10, pp. 494-497, 1 fig.

RIVERA, Vincenzo. Concia di semi di piante coltivabili con urina di animali. *Ibid.*, 1939, anno X, n. 4, pp. 327-328.

PIAZZA, Luigi. Concia delle sementi con urine animali. *Annali di Tecnica agraria*, Roma, 1941, anno XIII, fasc. V, pp. [133]-142; 1942, anno XIV, fasc. I, pp. [3]-20, figg. 1-7. Bibliografia, p. 20.

RIVERA, Vincenzo. Malattie delle piante. Amatrice (Rieti), Scuola tipografica dell'Orfanotrofio maschile, 1942, vol. I, p. 66.

differs little from that of the urine of pregnant females or adult males, the hypothesis was put forward that, among the factors which stimulate the development of growing plant tissues, there may be, in place of or in preference to sexual hormones, plant auxins the efficacy of which, in experiments carried out with pure products, resembles considerably that observed on seed treated with urine. These plant auxins, passed from the green aliments in the animal organism and subsequently emitted with the urine, would recommence action on the plants treated.

From the beginning of the experiment with animal urine on the seed of agrarian plants, an endeavour was repeatedly made — by one of us directly and also with the assistance of investigators working at the Plant Pathology Institute and at the Phytopathological Observatory of Perugia — to ascertain what influence, if any, animal urine had on the germination of fungi parasitic on plants. A biological action was constantly noted, action which was found to stimulate or depress the functions, according to the dose applied and the specific susceptibility of the spores.

In other terms, it was possible to establish that, according to the doses of urine and the species of parasitic fungus studied, there could be obtained a stimulating action of development manifesting itself by advanced and more vigorous germination, or, on the contrary, a depressant action, and even a devitalization of the spores treated.

We sum up in Table I the results of the experiments carried out on the spores of parasitic plant fungi ; these results agree with those obtained in all the series of experiments effected over a period of nearly three years.

The spores, in order to germinate, were put pendent in different dilutions of urine, in pure, fresh or fermented urine, and in water for control.

From Table I it is found that : —

(*a*) The inhibition of the germination of conidia of *Erysiphe graminis* is only obtained with not very fresh urine (urine employed 24 hours after taking of same), with a maximum dilution of 1 : 2, while if the same urine is utilized on the day when taken, the effects are more moderate. It should be taken into account that the conidia of experiment 3 had a minor vegetative vigour, as demonstrated by the control.

(*b*) The addition of calcium and sulphuric acid slightly accentuates the depressive effects observed in the corresponding experiments with diluted urine.

The results of Table II indicate that the uredospores of *U. appendiculatus* are much more susceptible to treatment with urine than the conidia of *E. graminis*, as, in the first case, up to a dilution of 1 : 8, germination does not take place and possibly the devitilization of the spores is obtained, while, in the case of *E. graminis*, in three out of four experiments a concentration of 1 : 1 was found insufficient.

In experiment 3, the uredospores employed had a lesser vegetative vigour than that of the uredospores in the two preceding experiments, as may also be noted from the germination of the control.

In these second experiments, the more moderate importance of the biological action of fresh urine compared with that of fermented urine, namely, urine employed seven days after emission, is confirmed.

TABLE I. — Development of conidia of mildew of cereals and grasses (*Erysiphe graminis*).

Experiment No.	Date of examination	Date of taking urine	Germination of conidia at different concentrations of urine					
			Undiluted	Diluted 1 : 1	Diluted 1 : 2	Diluted 1 : 3	Diluted 1 : 4	Control
1	3.IV.1943	3.IV.1943	Difficult	Difficult	Difficult	Fairly good	Excellent	Excellent
2	5.IV.1943	3.IV.1943	Very difficult	Very difficult	Very difficult	Fairly good	Difficult	Good
3	7.IV.1943	7.IV.1943	Very difficult	Difficult	Very difficult	Fairly good	Fairly good	Excellent
4	8.IV.1943	7.IV.1943	Nil	Nil	Nil	Difficult	Difficult	Excellent
				Diluted 1 : 4	Diluted 1 : 8	Diluted 1 : 12		
5	9.IV.1943	7.IV.1943	Nil	Excellent	Excellent	Excellent		Good
6	10.IV.1943	7.IV.1943 *	Nil	Difficult	Difficult	Fairly good		Excellent
7	13.IV.1943	12.IV.1943	Difficult	Fairly good	Excellent	Excellent		Excellent
8	13.IV.1943	12.IV.1943 *	Difficult	Difficult	Fairly good	Good		Excellent
9	22.IV.1943	12.IV.1943	Very difficult	Very difficult	Fairly good	Good		Excellent

* Lime and sulphuric acid were added to the animal urine.

TABLE II. — Development of uredospores of bean rust (*Uromyces appendiculatus*).

Experiment No.	Date of examination	Date of taking urine	Germination of uredospores at different concentrations of urine					
			Undiluted	Diluted 1 : 1	Diluted 1 : 4	Diluted 1 : 8	Diluted 1 : 12	Control
1	14.IV.1943	13.IV.1943	Nil	Nil	Nil	Difficult	Excellent	Excellent
2	28.IV.1943	21.IV.1943	Nil	Nil	Nil	Nil	Few germinations	Excellent
3	28.IV.1943	28.IV.1943	Nil	Nil	Nil	Nil	Difficult	Good

And now we come to the behaviour of a Peronosporaceous fungus in regard to urine ; this is summed up in Table III.

The conidia of this fungus show a more accentuated susceptibility than that of the conidia of *E. graminis* and less accentuated than that of the uredospores of *E. appendiculatus*.

It is remarkable, however, that a concentration of 1 : 1 proves inhibitive and that a concentration of 1 : 4 is so unfavourable for the germination of these conidia. Here the greater efficacy of fermented urine compared with fresh urine is evident, and it may be taken that by increasing the concentration of fermented urine to 1 : 3, it may be possible to find doses sufficient to devitalize the conidia.

Experiments have not yet been carried out on downy mildew of the vine (*Plasmopara viticola*). An endeavour has been made, however, to ascertain the behaviour of the green parts of different vine varieties after treatment ; the results are summarized in Table IV.

According to subsequent observations, the burns left traces on the leaves especially in growth, which appeared cupola in form. This evidently depended on the fact that the inhibition of growth affected principally or exclusively the growth zones of the leaves, much more susceptible to treatment than the leaves the growth of which was terminated or slower. It should be noted that the damage caused is much less in the case of fermented urine than with fresh urine. Successively, and particularly with the object of increasing the adhesiveness of the liquid employed, experiments were effected with a mixture of urine and lime or urine and Cano adhesive ; the results are indicated in Table V.

Sixteen days after treatment, the first experiment (fresh urine with 2 per cent. lime) presented the following aspect : On the plants treated with a dilution of 1 : 2, slight burns were noted on the apices of the leaves and occasionally an odd grape was burned. Residual traces of the lime still attached to the sprayed surfaces were to be noted, despite the fact that in the meantime there had been three heavy falls of rain of fairly long duration On the parts of vines treated with dilutions of 1 : 4, an occasional burn was found on a few leaves. Condition in general excellent ; residues of lime on surfaces still evident. The state of the plants treated with major dilutions shows little difference.

In short, it may be concluded that, with the exception of pure urine and dilutions of 1 : 1 which cause serious and immediate damage to the green parts, major dilutions do not seriously damage the vegetation of the grape vine. Of these major dilutions, it is not advisable, perhaps, to adopt that of 1 : 2 because of the damage occurring in particular to young leaves, but rather a concentration of 1 : 4 which only causes slight scald of no importance. It should be added that if, in the first case (fresh urine), only a few burns are observed, in the two other cases where treatment was effected with urine two and twenty-four days after taking of same, that is to say, with fermented urine in the first case and already mineralized urine in the second, no damage caused by the treatment was observed on the green parts of the vine.

The experiments just discussed were carried out on vines grown in pots and kept in the greenhouse. We desired to repeat the experiment in the vine-yard

TABLE III. — Development of conidia of downy mildew of lettuce (*Bremia lactucae*).

Experiment No.	Date of examination	Date of taking urine	Germination of conidia at different concentrations of urine					
			Undiluted	Diluted 1 : 1	Diluted 1 : 4	Diluted 1 : 8	Diluted 1 : 12	Control
1	23.IV.1943	22.IV.1943	Nil	Nil	Excellent	Good	—	Excellent
2	4. V.1943	3. V.1943	—	Nil	Fairly good	Good	Excellent	Excellent
3	4. V.1943	1. V.1943	Nil	Difficult	Difficult	Difficult	Excellent	Excellent
4	4. V.1943	27.IV.1943	—	Nil	Very difficult	Good	Excellent	Excellent
5	4. V.1943	26.IV.1943	—	Nil	Nil	Very difficult	Fairly good	Excellent

TABLE IV. — Results of urine treatment applied to vine plants.

Experiment No.	Date of treatment	Date of taking urine	Condition of leaves after 3 days treatment with urine					
			Undiluted	Diluted 1 : 1	Diluted 1 : 2	Diluted 1 : 4	Diluted 1 : 8	Diluted 1 : 12
1	3. V.1943	3. V.1943	General scald on young leaves; marginal burn on full-grown leaves	Scald and destruction of young leaves, general scald of adult leaves	Burns at apices, rare, on young leaves; very slight burn on adult leaves	Occasional leaves slightly burnt	No scald	No scald
2	3. V.1943	1. V.1943	Destruction of young leaves; deep marginal burns on adult leaves	Appreciable burning of young leaves; no scald of full-grown leaves	Some burns on young leaves	No scald	No scald	No scald
3	3. V.1943	27.IV.1943	Destruction of young leaves; deep marginal burning of adult leaves	Deep burns on young leaves; appreciable burning of apices of adult leaves	Only young leaves burnt	No scald	No scald	No scald

TABLE V. — Results of urine plus 2 per cent. lime treatment applied to vine plants.

Experiment No.	Date of treatment	Date of taking urine	Adhesiveness	Condition of leaves after 4 days urine treatment					
				Undiluted	Diluted 1:1	Diluted 1:2	Diluted 1:4	Diluted 1:8	Diluted 1:12
1	3. V.1943	3. V.1943	Excellent	Deep scald adult leaves; complete destruction of young leaves	Deep burns on young and adult leaves	Slight burning of apices of adult leaves; deep burns on young leaves	Slight burns on young leaves	No scald	No scald
2	3. V.1943	1. V.1943	Fairly good	Deep burns on adult leaves; complete destruction of young leaves.	Serious burns only on young leaves	Occasional burning of apices of adult leaves; deep burns on young leaves	No scald	No scald	No scald
3	3. V.1943	27.IV.1943	Fairly good	Deep burning followed by fall of adult leaves	Deep apical burning of adult leaves; serious scald of young leaves	Apical scald of young and adult leaves	No scald	No scald	No scald

of the experiment fields of the Institute of General Agronomy of the University of Perugia, and we treated vines belonging to varieties susceptible to downy mildew. The treatment was effected in two different days, namely, the first time on May 12, 1943, with fresh urine with the addition of 2 per cent. lime, and with fermented urine with 2 per cent. Cano adhesive, and the second time, with fresh urine plus 3 per cent. lime, and fermented urine with 2 per cent. Cano adhesive. The urine adopted for the first treatment was, before the addition of lime, alkaline, while that employed in the second treatment, tested with litmus paper, gave an acid reaction. This led us to increase the lime from 2 to 3 per cent. for the second treatment. In both cases, the dilutions of urine in water were the following — 1 : 2, 1 : 4, 1 : 6.

Examination made on June 19 showed a few burns on the leaves of the plants treated with fresh urine and fermented urine diluted 1 : 2 and only occasional burns with a dilution of 1 : 4 ; in the case of treatments with fermented urine 1 : 4 and fresh urine 1 : 6, some leaves presented a cupola formation.

This abnormal formation may be explained, in our opinion, by the action of the urine become concentrated, through evaporation, at the points where flow has stopped, usually on the marginal zones of the leaves. In these zones where metabolism is active, the concentration of urine by evaporation has brought about a check in growth which, with the continued development of the neighbouring zones, has caused the cupola or curled formation of the leaves. Even considering these facts separately, it may be said that treatment with urine, at the concentrations indicated, has not damaged the parts treated.

Successive examinations on June 30 and July 10 gave similar results.

Treatment was repeated on July 10 and on July 15 it was found that, apart from some burns on the leaves treated with fresh urine diluted 1 : 2 with the addition of 3 per cent. lime, the vegetation of the plants treated was to be considered excellent.

In no case was mildew observed, though this is to be attributed solely to the climatic conditions of the year which were unfavourable to the development of the fungus.

The results just expounded only give us a partial answer to the problem, namely, that the doses of fresh urine and fermented urine, with the admixture of lime and Cano adhesive, experimented with are not harmful to the green parts of the vine treated. The value of the treatment as a fungicide and for the control of downy mildew, however, has not been ascertained from these experiments.

We have desired, however, to publish these preliminary results, as they may be of use to other investigators in trying out this new method of control of the downy mildew of the vine.

SWITZERLAND.

The Colorado beetle (*Leptinotarsa decemlineata*) in French Switzerland*

Situation on September 1, 1943.

The month of August, owing to the dry weather and very hot spells, was decidedly unfavourable for Colorado beetle breeding. Up to August 22, there were only three days with light showers and the temperature rose to over 30°C. in the shade. A heavy downpour on the 22nd caused a sudden sharp drop in temperature, though the weather, for the greater part, remained dry and fine.

Like last year, these climatic conditions had a marked effect on the development of the second generation. Although the summer adult insects appeared, in several localities, in sometimes considerable numbers towards the beginning of the month, oviposition was rare and the majority of the insects soon disappeared to lie dormant in the ground. Unhatched and completely dried up egg masses were also found. The observations of this year therefore, confirm those of the previous year in regard to the action of dry heat on oviposition and on the development of the eggs.

At the end of the month, apart from a few rare and small foci of adult insects and larvae scattered here and there, practically everywhere only a few insects were reported. Only those regions which were severely infested since spring suffered somewhat more severe invasions of larvae, particularly on potatoes of the Ackersegen variety. In the mountains, where infestation remained slight the whole year, here and there foci of adult insects and larvae were found, though it was not possible to distinguish distinctly a second generation.

The situation on September 1, according to the reports of the cantonal commissaries, may be summed up as follows:

Genève. At present, very few larvae are to be found on the late varieties which, at the time of the first generation, were covered with the parasites. On the other hand, the number of adult insects is enormous in some regions, especially at Moulin Vert, Chancy and the Plaine de l'Aire.

Vaud. Despite a considerable emergence of insects of the second generation, there was relatively little oviposition, and the larvae are more or less rare and scattered, with the exception of some large foci here and there. On August 31, 318 communes had reported the discovery of Colorado beetles, as against 370 communes for the corresponding period in 1942.

Neuchâtel. At the beginning of the month, several foci were reported in different localities, particularly in the Val de Travers, but the position improved rapidly and, from the end of the first week, everywhere a decided regression in the development of the Colorado beetle was reported. Despite the heat, the second generation does not appear to have developed to any appreciable extent.

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* Communication from the Federal Experiment and Seed Testing Station, Lausanne, Mont Calme, Switzerland.

Bernese Jura. Invasion has diminished considerably; on the plain the late varieties are attacked but little and not at all in the mountains. The second generation is of little importance and is only found in the regions where treatment was not carried out in time nor under good conditions.

Fribourg. Only a few small foci of no importance were reported during the first fortnight of August. Of the 5773 foci, in 163 communes, reported since the beginning of the season, many have been destroyed by treatments and the others, in general, are of little importance at present.

Valais. During August, 13 fresh foci were reported, distributed only in the three communes of Monthey, Martigny Ville and Savièze. This year, to date, 147 foci in 21 communes have been discovered, compared with 207 foci in 1942. In general, the measures taken led to the complete destruction or a considerable regression in the majority of the foci.

After the appearance of the summer adult insects, in the middle of August, scouting by school-children was organized in different localities. Although delayed in several communes, because of holidays and harvesting operations, however, by this means it was possible to check again the dispersion of the Colorado beetles, facilitate collection of the adult insects and to prepare, wherever necessary, for further treatment. This practice also showed that several communes, which had been invaded at the beginning of the summer and which had treated the potato fields, were now free from the Colorado beetle.

In the regions more severely invaded, a second, sometimes even a third arsenical treatment was given, but in general, the first treatments, favoured by the fine weather, sufficed to check the development of the parasite. In some parts, Gérasol was employed against the summer adults, particularly in the Plaine de l'Orbe, where a severe invasion of the insects was effectively combatted.

The last harvesting of the potatoes is being or is about to be carried out in the fields; consequently, the Colorado betle cannot cause any further damage.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Denmark. — Notification No. 305 of June 23, 1943 relates to the sanitary control of the exportation of edible potatoes. (*Lovtidenden A.*, København 30. Juni 1943, Nr. 45, sid. 1078).

*** The aforesaid Notification is followed by the regulation of the sanitary control of potato exports. This regulation is numbered 306 and dated June 23, 1943. (*Ibid.*, sid. 1079-1082).

*** Notification No. 309 dated June 23, 1943 regards the inspection of fields, the crops of which are intended for export, with a view to further cultivation. (*Ibid.*, sid. 1089-1090).

*** Follows under No. 310 and the date of June 23, 1943, the regulation relative to the same subject contained in Notification No. 309. (*Ibid.*, sid. 1091-1092).

*** Notification No. 311 of June 23, 1943 treats on the importation of potatoes. An example of the health certificate is attached thereto. (*Ibid.*, sid. 1093-1096).

*** This Notification is followed by Regulation No. 312 of June 23, 1943 regarding the same subject. (*Ibid.*, sid. 1097-1099).

*** Notification No. 313 of June 23, 1943 regards the exportation of living plants and parts of plants. (*Ibid.*, sid. 1100).

*** It is followed by Regulation No. 314 dated June 23, 1943 regarding the same question. (*Ibid.*, sid. 1101-1103).

France. — A Decree dated May 19, 1943 regarding the utilization of nicotine and its salts for treating plants prescribes as follows : —

Article 1. — Nicotine and the salts of nicotine may be employed in the form of liquid treatments or as dusts for the destruction of parasites on fruit, ornamental and industrial crops, as well as on field crops under the conditions and during the periods fixed below.

Nicotine may also be utilized for fumigating in greenhouses and under glazed forcing frames.

I. — Liquid and dry treatments for standing crops.

Article 2. — Liquid and dry treatments with the use of nicotine products are authorized at all seasons, except during the period of ten days preceding harvesting of the edible parts of the plants treated or of catch-crops.

They should only be effected outside the hot hours of the day.

In no case should any traces of nicotine remain on the parts of plants intended for sale and consumption.

Nicotine dusts can only be applied when the crops are at least twenty metres from habitations.

Article 3. — The products intended for liquid and dry treatments should comply with the following conditions :

(*a*) Aqueous or oily solutions and powders for mixing should contain, save preliminary authorization, a minimum of 10 per cent. and a maximum of 40 per cent. by weight of nicotine alkaloid in the free or combined state.

These solutions and powders should be kept in the original packages and mixed with water at the time of use, to dilutions such that 100 litres of the liquid applied to the plants contains at a maximum 300 grams of nicotine alkaloid.

The nicotinized powders to be utilized for dusting should contain, save preliminary authorization, a minimum of 1 per cent. and a maximum of 3 per cent. by weight of nicotine alkaloid in the free or combined state. They should be kept in the original packing until required for use.

II. — Fumigating in greenhouses and under glazed forcing frames.

Article 4. — The disinfection of plants by nicotine fumigation may be carried out at any period of the year under the conditions specified in Article 5. It should only be effected by qualified and trained persons pertaining either to groups for permanent protection against crop pests, or to private enterprises, the applications of which will have been granted by the Secretary of State for Agriculture and Supplies.

In the application it is compulsory to indicate the person who will be civilly responsible for the utilization of the nicotine products and to give the information required according to the instructions added to this Decree.

Authorization to practise these treatments will only be granted to enterprises having taken out an insurance policy for a sum sufficient to cover their responsibility in the case of accidents occurring to their workers or to third persons.

This authorization has to be renewed each year, it being clearly understood that it automatically lapses on December 31.

Article 5. — The disinfection of plants by nicotine fumigation can only be effected at nightfall. If there are inhabited premises within a distance of a least six metres from the place of fumigation, these should be evacuated, watched and the public warned for as long as operations, including ventilation, last.

The persons responsible will take charge, for the entire duration of the operations, of all the premises or buildings including those which will have been evacuated beforehand. All openings in the greenhouses and forcing frames will be stopped up from the beginning of the operations.

All approaches should be provided with a placard bearing, in letters at least five centimetres high, the indication ' Mortal danger, entry prohibited, nicotine fumigation '.

After fumigation, thorough ventilation should be assured by a current of air, for at least two hours, the frames and doors being opened towards the outside.

Entry into the greenhouse or under the forcing frames should not be permitted until after this period of ventilation.

Article 6. — For the fumigations indicated in the preceding articles, use can only be made of the products recognized by the Minister of Agriculture, on the advice of the commission charged with the questions relative to the utilization of poisons in agriculture.

These products should have, save previous authorization, a minimum content of 20 per cent. and a maximum content of 50 per cent. of nicotine alkaloid in the free or combined state.

The products intended for the gaseous treatment should be delivered and kept in the original packages.

III. — General provisions.

Article 7. — The nicotine products intended for liquid treatments, dusting or fumigating may only be sold in drums or metal cans, exclusive of all receptacles utilizable as containers for foodstuffs. These drums of metal cans will bear the

word ' nicotine ' or the name of the nicotine salt in black letters very easily seen, on an orange-red label covering at least a third of the height of the receptacle and fixed in such a way that it cannot be unintentionally detached. This inscription should be quite separate from the compulsory instructions provided for by the Decree of May 11, 1937. Moreover, the receptacle should be encompassed with a band orange-red in colour, bearing in black and easily legible, the word ' poison ' and a caput mortuum.

These metal receptacles should be fitted with a fool-proof closing system which will enable them to be closed hermetically after partial utilization of the contents.

In no case, either for retail sale, or in the course of handling by the farmers, can the products indicated in Articles 3 and 6 be kept in receptacles other than those described above.

It is prohibited to keep the empty containers after use ; they must be buried or rendered unusable.

Article 8. — The nicotine products defined in Articles 3 and 6 must be kept in locked premises, of which only the farm overseers will have the key.

When not required, the receptacles containing the nicotine preparations should always be kept hermetically closed.

In regard to fumigation operations, the operators and assistants will be provided with gas masks.

They are forbidden to smoke during the course of operations out of doors.

They will place themselves in such a way that the wind blows away from them the substance projected onto the plants.

They will take care not to put their hands into the products.

The farm overseers will supply the operators with clothing or overalls to be used exclusively for this work and will see to the washing of these outfits after each working day.

It is prohibited to let the workers take their food before having removed their working clothes and before having washed their hands and faces.

The necessary adjuncts for washing will be placed at the disposal of the workers at the place itself of operations so that each will have fresh water to wash himself.

The apparatus and implements utilized for the treatments should be emptied and carefully washed at the place itself of operations.

The unusable residual products should be carefully collected and buried in the ground. In no instance should they be thrown into the sides of roads, into ditches, ponds and streams.

The leaves or objects which have come into contact with the nicotine products cannot be utilized for presenting, wrapping or dispatching any food substance.

The farm overseers are obliged to bring the preceding instructions to the knowledge of their personnel and to ensure their execution under their own responsibility.

They should possess first-aid material and a medical emergency outfit so as to assure preliminary treatment in the case of poisoning.

Details of this first-aid material and the contents of the emergency outfit as

well as the immediate measures to be taken in the case of poisoning are indicated in the instructions attached to this Ministerial Decree.

The provisions of this Ministerial Decree and the measures referred to above in the case of poisoning will be posted up in the farms where nicotine products are employed. (*Journal officiel de l'Etat français*, Vichy, 4 août 1943, LXXV^e année, n° 185, pp. 2031-2032).

*** By Ministerial Decree of July 27, 1943, the apple canker (*Nectria ditissima*) is inscribed in the list of plant parasites recognized as dangerous for French crops.

From September 1, 1943, the cultivation in nurseries as well as the putting up for sale and the sale of apple seedlings parasitized by canker are prohibited.

In the case of the presence of canker being observed on apple seedlings cultivated in nurseries, transported or placed on sale, the inspectors and supervisors for plant protection are empowered to see to their immediate destruction by cutting at the level of the collar.

If the proprietor refuses to destroy the cankerous seedlings, the inspector or supervisor will proceed to the immediate seizure of the diseased plants and draw up an official report for the purpose of taking legal action ; the cankerous seedlings will subsequently be destroyed through the offices of the plant protection service, at the expense of the contravener, after taking of four samples for full expert examination.

These provisions apply to all apple seedlings, whether intended for sale or for the grower's own orchard. (*Ibid.*, 22 août 1943, n° 201, p. 2216).

*** A Decree dated July 29, 1943 prescribes the following : —

Insofar as regards vines, fruit, forest and ornamental trees and shrubs, are prohibited, from September 1, 1943 : —

(1) The putting up for sale or the sale by hawking on the public thoroughway or at fairs and markets, of slips or seedlings with bare roots. Exhibition for over twelve hours in a shop may only be effected if the roots are placed in soil, mould, sawdust, moss or sand kept moist ;

(2) The placing on sale or sale of packets of cuttings or nursery seedlings, comprising a mixture of varieties, even if the purchaser is notified of the contents of the mixture.

From the same date, it will be compulsory for each packet of cuttings or seedlings placed on sale or dispatched to bear a label on which will be legibly inscribed: the name and address of the seller, sanitary control number, variety and, for grafted slips, the species, and variety of stock. The quantity will also be indicated, even if the packet only contains one example of the variety.

The merchandise should not leave the selling establishment without a bill of sale or invoice bearing the particulars inscribed on the labels, as well as the conditions of sale, having been made out. The seller will be obliged to remit or send to the purchaser the bill of sale or invoice and keep duplicates for presentation on request by way of control.

Only vine wood from fields of stools inscribed in the phytosanitary control

registers should be utilized for cuttings, consolidated scions and roots intended for sale.

The commercial utilization and circulation of shoots of stocks of fruiting vines or consolidated scions derived therefrom are prohibited.

Fields of stools and nurseries should not contain any plant foreign to the variety. (*Ibid.*).

Norway. — A Decree of March 16 lays down measures relative to the manufacture of and trade in preparations for the control of plant diseases and pests. (*Norsk Lovtidend*, Oslo 19 mars 1943, nr. 13, side 166-170).

*** Another Decree dated March 23, 1943 comprises measures for the control of wart disease of the potato (*Synchytrium endobioticum*). (*Ibid.*, 26 mars 1943, nr. 14, side 178-180).

Rumania * — The Ministerial Decree No. 148.228 of July 7, 1943 prescribes the following : —

The arsenical preparations authorized by the Ministry of Agriculture and Domains, employed in the control of plant diseases may only be placed on sale if in a pack showing a caput mortuum and the word ' poison ' written in capital letters.

With each package will be given method of use and it will be specified that the handling of arsenical preparations must only be entrusted to a reliable person, with a knowledge of the precautionary measures to be taken.

Arsenical preparations and all apparatus employed in handling them must be kept in premises which can be locked. These premises or rooms should not contain foodstuffs, forage, clothing, seed, etc.

Arsenical preparations should not be touched with the hand, nor shaken.

The packing material should be burnt.

All measures should be taken in order that the residue of these preparations does not poison drinking-troughs, streams, etc.

During operations the workers should have the eyes protected by glasses, and keep the mouth and nose covered.

On finishing said operations and before eating or smoking, the workers should have a thorough wash.

Spraying and dusting with arsenical preparations should not be carried out against the wind.

No eating or smoking during operations.

Before eating or smoking, the worker should wash his hands well and rinse out his mouth with water.

The operators must not let the nozzles of the sprayers come near the mouth.

If any symptom of poisoning is manifested, a doctor must be called.

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* Communication from the Chief of the Plant Protection Service, Ministry of Agriculture and Domains of Rumania, Bucharest.

Until arrival of the doctor, bring about vomiting by means of hot water, etc.

To prevent accidents caused through the use of the arsenical preparations recommanded in phytotheraphy and authorized by the Ministry of Agriculture and Domains, products which by their nature are poisonous for man and animals, the following precautions should be taken :

The use of arsenical preparations in wine-growing is prohibited.

Treatment of the following with arsenical preparations is prohibited : —

(*a*) crops in flower ;

(*b*) pip- and stone-fruit trees when the fruits are 20 days at least from harvesting ;

(*c*) berry fruits (grapes, red currents, raspberries, strawberries, etc.) 6 weeks at least before harvesting, when treatment is indispensable ;

(*d*) vegetable crops intended for consumption, exception being made for those serving for reproduction ; fruit or other trees cannot be sprayed or dusted with arsenical preparations when, between the plants to be treated or close to them, are grown vegetables or other plants the fruits of which will be harvested within a period of less than 6 weeks from treatment ;

(*e*) it is prohibited to treat with arsenical preparations crops placed near bee-hives, when the bees are on the wing and without having previously obtained special permission from the bee-keeper.

Authorized preparations containing arsenic may only be sold by the institutions and merchants authorized by the Ministry of Agriculture and Domains.

Prof. UGO PAPI, *General Secretary of the International Institute of Agriculture.*

Printed by F. FAILLI, Printing-Office of the International Institute of Agriculture
Rome, Villa Umberto I, February 20, 1944.

Besides attending to the revision of the statistical series which will be continued in 1944, the Bureau will devote its attention to the preparation of the *International Yearbook of Agricultural Statistics*, 1921-1940, in two volumes, with an appendix for the years 1941 to 1943. It will also publish the 4th and last volume of its *Yearbook of Forestry Statistics : Asia and Oceania*.

The Bureau of Agricultural Science will devote its activity chiefly to essential questions of which the study has already been undertaken. Some of them have been the object of important articles, such as *human alimentation*, the *cultures of temperate countries*, *animal production and agricultural industries*. The *International Bulletin of Plant Protection* will be issued regularly. Since, however, the material contained in this periodical is essentially based on the collaboration of a number of correspondents (a collaboration that has been well nigh interrupted for several months), it may be expected that, unless the situation improves, some sections of the *Bulletin* will be suspended. They will be replaced by occasional and retrospective notes.

The program of the Bureau of Economic and Social Studies includes the study of the most essential problems of general reconstruction and of the reconstruction of agriculture. Among them are to be mentioned the problems of *population*, and of farm management, economic and social conditions of farmers. land systems, agricultural credit, agricultural labour, continental economy, rural economy.

We have already mentioned, in the first part of this report, the survey of the Chief of the Bureau in which all these questions are framed within the lines of a methodological synthesis of such nature as to assure the coordination of the works of the Service.

The Library Bureau will continue, in 1944, the *International bibliography of agricultural economics*, and the work of the *International Directory of the agricultural periodicals existing in the Library*. The Bureau will also prepare an inventory of the *Bulletins of experimental stations*. The preparation of a new catalogue of the Incunabula belonging to the Institute, and of special broadcast material on the Library activities, is also included in the program of work of the Library in 1944.

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